**Year 10 Exam Combined Science - Biology**

**Topic 1**

* Cells and functions of the different parts– animal, plant, bacteria and specialised cells (egg, sperm, ciliated epithelial cells).
* Microscopes – light and electron microscopes, magnification calculation, drawing cells, using a microscope and preparing slides.
* Enzymes – lock and key hypothesis, effect of temperature, pH and substrate concentration and core practical on effect of pH on amylase digesting starch
* Movement of substances – osmosis, diffusion, active transport and core practical on osmosis in potatoes.

**Topic 2**

* Cell cycle – interphase, mitosis including the stages and outcomes. Cause of cancer.
* Growth – Growth in plants and animals, percentile charts, stem cells and their use in medicine.
* Nervous system – structure and function of neurones including myelination. Receptors, effectors and the nerves involved in a reflex arc. Synapses and reactions.

**Topic 3**

* meiosis
* DNA – structure, extraction from fruit and key terms associated with genetics
* Inheritance – Punnett squares for inheritance of dominant and recessive traits, percentage outcomes for crosses, family pedigrees.
* Variation – genetics and environmental influences, human genome project, effect of mutations on phenotype

**Topic 4**

* Evolution – Darwin’s theory of evolution, antibiotic resistance, human evolution, the use of stone tools to date species of human ancestors.
* The three-domain classification – know prokaryotic, eukaryotic and reasons for the domain system
* Selective breeding and genetic engineering including the steps involved and the advantages and disadvantages of them in farming and medicine. The advantages and disadvantages of insect resistance crops.

**Topic 5**

* Definition of health from the WHO, communicable and non-communicable diseases.
* Symptoms, causes, mechanism of spread and prevention for: cholera, TB, chalara ash dieback, malaria, HIV.
* Physical and chemical barriers to infection.